UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/518,165	03/01/00	KOULCHIN	V

HM12/0911

MARY HELEN SEARS ESQ
THE M H SEARS LAW FIRM CHARTERED
910 SEVENTEENTH STREET N W SUITE 800
WASHINGTON DC 20006

EXAMINER	
HINES,J	
ART UNIT	**PAPER NUMBER**
1645	6

DATE MAILED: 09/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

File Copy

Office Action Summary	Application No.	Applicant(s)	
	09/518,165	KOULCHIN ET AL.	
	Examiner	Art Unit	
	Ja-Na A Hines	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *25 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1-10,12-17 and 19-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *11,18 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) *1-21* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II in Paper No. 5 is acknowledged. The traversal is on the ground(s) that "...the restriction requirement is highly impractical because so long as the end result attained in Group II must be achieved by using the product obtained by the practice of Group I method in the method of group III to achieve the required antibodies, the processes are not distinct in the way the term has been traditionally used in PTO practices. However, this is not found persuasive because the inventions are unrelated. As defined by the MPEP, inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the inventions are unrelated. Group I a method for obtaining antibodies, group II an ICT assay and group III a method for obtaining bacteria. The ICT assay of group II requires multiple zones on a strip to detect the presence of bacteria. Neither of the methods of group III or I requires this strip or the discreet zones. Neither of the methods can detect the presence of bacteria. Finally, the ICT assay requires different reagents than either group I or III. Therefore, the invention of group II is unrelated to either group I or III, because group II has different effects, functions, and modes of operation.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. The drawings are objected to because of the reasons set forth in the attached PTOL-948. Correction is required.

Specification

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Objections

4. Claim 11 is objected to because of the following informalities: In claim 11, section 2(ii), the phrase ends in period, however the claim language continues, therefore the period needs to be removed. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11, 18 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Acronyms like ICT and sq. must be spelled out when used for the first time in a chain of claims.

6. Claim 11 uses the word "embedded." Embedded implies that the conjugate is immobilized on the zone, therefore it becomes unclear how the embedded or permanently associated label and antibody will be able to travel to the second zone to form the appropriate label-antibody-antigen-antibody complex.

7. In claim 11, it is unclear how the antibody of (a) (I) (2) relates to the label of (a) (I) (1). There is no association or relationship between the label and the antibody, therefore it is unclear whether or not the label is conjugated to the antibody and how appropriate detection can occur.

8. Claim 11 recites the limitation "a first zone" in section (b), however section (a) (I) recites a zone and no first zone is previously identified. Thus, there is a lack of antecedent basis.

Also, 2(ii) recites a second zone, however no zone was named a first zone. Therefore, it is requested that consistent terminology be used.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imrich et al.(US Patent 5,415,994) in view of Cuatrecasas et al. (US Patent 4,411,832). Imrich et al. (US Patent 5,415,994), teach devices, methods and kits for detecting analytes in biological sample where prior to detection, extraction can occur (col.1 lines 5-10). Clinical detection of microbial pathogen in biological samples can determine accurately and rapidly infectious pathogens such as Haemophilus influenzae (col. 1 lines 23-30 and col. 7 lines 2). Species-specific antigen of many pathogenic organisms require pretreatment prior to detect, such as *Legionella* and it may be detected by non-serotype monoclonal antibodies after pretreatment with detergents and

other reagents (col. 1-2 lines 67-3). Biological material can be obtained from patients and includes urine, serum, sputum, and pharyngeal exudates (col.3 lines 9-13). Non-patient non-biological samples may also be used (col. 3 lines 25-28). The device comprises a sample receiving zone, extraction chamber, a labeling zone having means for specifically labeling the analyte and a capture zone (col.3 lines 48-56). To detect bacteria, a sample may be pretreated with an extraction solution (col. 4 lines 20-24). Bibulous materials such as untreated paper, nitrocellulose, derivatized nylon, cellulose and other like materials may be used along with appropriate blocking agents (col. 4 lines 56-63). The labeling zone contains a means for specifically labeling the target analyte. Immunoglobulins may be antibodies of any isotype or like fragments (col. 5 lines 15-23). The label may be soluble or particulate and may include dyed immunoglobulins binding substances such as dyes, polymers, latex beads or metallic sols (col. 5 lines 28-38). "As treated sample flows through the labeling zone, the target analyte in the sample binds the labeled antibody thereby indirectly labeling the target analyte. The sample continues to flow into the capture zone on the matrix. A compound capable of specifically binding the labeled target analyte is immobilized in the capture zone. As sample flows into the capture zone labeled target analyte will bind the immobilized immunoglobulins thereby retaining label in the capture zone. The presence of analyte in the sample may then be determined by visual identification of label retention in the capture zone (col. 5 lines 39-52). The device has an observation window located over the capture zone of the matrix (col. 7 lines 10-20). However Imrich et al., does not teach antibodies having been purified by passage over a chromatographic affinity column.

Cuatrecasas et al., teach polysaccharide matrices comprising macromolecule spacer arms for use as adsorbents in affinity chromatography techniques. Affinity

chromatography techniques are used to purify various biologically active molecules and use soluble macromolecular "spacer" or "arms" to separate a polysaccharide matrix from the specific ligand to be purified (col. 1 lines 17-26). Affinity chromatography exploits the unique biological property of these proteins to bind ligands specifically and reversibly (col. 1 lines 40-43). Proteins to be purified can be passed through a column containing insoluble polymers or gel to which specific competitive ligand has been covalently attached (col. 1 lines 43-45). Proteins not displaying appreciable affinity for the ligands will pass unretarded through the column, whereas those which recognize the inhibitor will be retarded to an extent related to the affinity constant under experimental conditions (col. 1 lines 45-51). The principle uses "immunoadsorbents" for the purification of antibodies. "In order to use the method successfully, the essential group for interaction with the molecules to be purified must be sufficiently distant from the polymer surface to minimize steric interference. Such a distance can be obtained by introducing a spacer molecule bound thereto. Since the only truly effective method available for binding various molecules to the conventional matrices. Is by activation.... the spacer must contain a free amino group through which the binding is effective. " (col.1-2 lines 60-5). A wide variety of different spacer molecules is also taught (col. 3-12).

No more than routine skill is involved in adjusting the amount of component of the claimed process to suit a particular concentration. Changes in concentrations do not impart patentability unless recited in ranges which produce new and unexpected results. *In re Aller et al.* (CCPA 1955) 220 f2d 454, 105 USPQ 233.

Therefore, it would have been obvious at the time of applicants invention to have used purified antibodies to a known bacterial antigen such as *Legionella* antigen in a well known immunochromatographic assay for detection of bacteria as taught by Imrich

et al., where the antibodies were purified using well known affinity chromatography techniques as taught by Cuatrecasas et al.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over of Imrich et al.(US Patent 5,415,994) in view of Cuatrecasas et al. (US Patent 4,411,832) in further view of Yen et al. (US Patent 4,206,094) and Hansen et al., (5,356,778). Imrich et al., and Cuatrecasas et al. have been discussed above, however none teach the use of finely dived gold particles as a labeling agent and target bacteria being *Haemophilus influenzae* type b. Yen et al., teach a method for producing a biological reagent. The introduction of finely divided metals would eliminate the necessity to bind radioactive or fluorescent tags (col. 2 lines 27-30). These particles are found to bind antibodies and have application in the detection of a variety of receptors (col. 3 lines 25-30). These reagents are hydrophillic, hydrolytically stable, biocompatible, have good mechanical strength, well-characterized structure, and can be systematically varied by selection of conditions (col. 3 lines 43-49). The metals are fine evenly sized materials having a uniform diameter and are electron dense heavy metals like gold (Au) (col. 6 lines 23-29). However Yen et al., does not teach detection of *Haemophilus influenzae.*

Hansen et al., teach a method for detecting gram-negative liposaccharides in biological fluids. The basic structure of lipopolysaccharides (LPS) involves three relatively well-defined regions in all gram-negative bacteria (col. 2 lines 23-26). The specific detection of Haemophilus influenzae type b (Hib) is taught (col. 6 lines 35-37). The capture monoclonal antibodies will bind any Hib endotoxin found in the sample (col. 6 lines 37-39). The instant specification defines capsular carbohydrate antigen to include lipopolysaccharies.

Accordingly, no more than routine skill is required to use finely divided metallic gold particles as taught by Yen et al., to detect Haemophilus influenzae type b carbohydrate antigen as taught by Hansen et al., in an immunochromatographic assay taught by Imrich et al., and Cuatrecasas et al., because Yen et al., teaches the gold particles eliminate the necessity to bind radioactive or fluorescent tags and the particles are hydrophilic, stable, biocompatible and have good mechanical strength and Hansen et al., teaches it is well known in the art to detect Hib in immunoassays.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na Hines whose telephone number is (703) 305-0487. The examiner can normally be reached on Monday through Thursday from 6:30am to 4:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached on (703) 308-3909. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Ja-Na Hines

September 5, 2001

LYNETTE R. F. SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600